

I claim:

1. An improved ground illumination system for a vehicle comprising:
an exterior mirror assembly adapted for attachment to a side of the vehicle;
said exterior mirror assembly including a mirror reflective element, said
reflective element mounted on an actuator whereby the rearward field of view of said mirror
reflective element is adjustable by actuation of said actuator;

said exterior mirror assembly including a ground illumination light assembly,
said ground illumination light assembly configured so as to illuminate at least a ground area
adjacent an entrance to said vehicle when said exterior mirror assembly is attached to said
side of said vehicle and when said ground illumination light assembly is illuminated;

wherein said ground illumination light assembly comprises a single non-
incandescent light source, said single non-incandescent light source comprising a single high-
intensity power light emitting diode, said single high-intensity power light emitting diode
having a luminous efficiency of at least about 1 lumen/watt when said single high-intensity
power light emitting diode is operated and wherein said single high-intensity power light
emitting diode is operated at a forward current of at least about 100 milliamps;

said single high-intensity power light emitting diode being provided with a
heat dissipation element, said heat dissipation element adapted to function as at least one of a
heat sink and a heat dissipater for power dissipated by said single high-intensity power light
emitting diode;

said single high-intensity power light emitting diode operating at an
operational voltage that is less than a percentage of the battery/ignition voltage of the vehicle
to which said exterior mirror assembly is adapted to attach; and

wherein said exterior mirror assembly includes at least one of:

- i) a series power resistor, and
- ii) a DC voltage to DC voltage converter.

2. The improved ground illumination system according to Claim 1, wherein said
single high-intensity power light emitting diode dissipates at least about 0.5 watts of power
when operated.

3. The improved ground illumination system according to Claim 1, wherein said single high-intensity power light emitting diode dissipates at least about 1.0 watt of power when operated.

4. The improved ground illumination system according to Claim 1, wherein said single high-intensity power light emitting diode dissipates at least about 1.5 watts of power when operated.

5. The improved ground illumination system according to Claim 1, wherein said single high-intensity power light emitting diode dissipates at least about 2 watts of power when operated.

6. The improved ground illumination system according to Claim 1, wherein said light assembly includes said heat dissipation element.

7. The improved ground illumination system according to Claim 1, wherein said heat dissipation element includes a reflective surface for reflecting light emitted by said single high-intensity power light emitting diode.

8. The improved ground illumination system according to Claim 7, further comprising a light directing element, said light directing element directing light emitted from said single high-intensity power light emitting diode toward the ground area.

9. The improved ground illumination system according to Claim 7, further comprising a lens, light from said single high-intensity power light emitting diode passing through said lens.

10. The improved ground illumination system according to Claim 1, wherein said heat dissipation element comprises a heat sink.

11. The improved ground illumination system according to Claim 10, wherein said heat sink comprises a metal heat sink.

12. The improved ground illumination system according to Claim 10, wherein heat sink includes a heat dissipation surface area of at least about 1 square inch.

13. The improved ground illumination system according to Claim 10, wherein said heat sink includes a heat dissipation surface area of at least about 2.5 square inches.

14. The improved ground illumination system according to Claim 10, wherein said heat sink includes a heat dissipation surface area of at least about 3.5 square inches.

15. The improved ground illumination system according to Claim 10, wherein said light assembly includes said heat sink.

16. The improved ground illumination system according to Claim 1, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink.

17. The improved ground illumination system according to Claim 16, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink by a heat sink compound.

18. The improved ground illumination system according to Claim 16, wherein said heat sink comprises a reflector.

19. The improved ground illumination system according to Claim 1, wherein said single high-intensity power light emitting diode operates at an operational voltage of at least about 1 volt.

20. The improved ground illumination system according to Claim 19, wherein said single high-intensity power light emitting diode operates at an operational voltage of at least about 2 volts.

21. The improved ground illumination system according to Claim 20, wherein said single high-intensity power light emitting diode operates at an operational voltage of less than about 5 volts.

22. The improved ground illumination system according to Claim 1, wherein said single high-intensity power light emitting diode operates at an operational voltage in a range from about 2 to 5 volts.

23. The improved ground illumination system according to Claim 1, wherein said percentage is about 15%.

24. The improved ground illumination system according to Claim 1, wherein said percentage is about 20%.

25. The improved ground illumination system according to Claim 1, wherein said percentage is about 35%.

26. The improved ground illumination system according to Claim 1, wherein said percentage is about 50%.

27. The improved ground illumination system according to Claim 1, wherein the battery/ignition voltage is about 12 volts nominal.

28. The improved ground illumination system according to Claim 1, wherein the battery/ignition voltage is about 42 volts nominal.

29. The improved ground illumination system according to Claim 1, wherein the battery/ignition voltage is in a range of about 12 to 42 volts nominal.

30. The improved ground illumination system according to Claim 1, wherein said power resistor is rated to dissipate at least about 2.5 watts of power.

31. The improved ground illumination system according to Claim 1, wherein said power resistor is rated to dissipate at least about 3.0 watts of power.

32. The improved ground illumination system according to Claim 1, wherein said power resistor is rated to dissipate at least about 3.5 watts of power.

33. The improved ground illumination system according to Claim 1, wherein said DC voltage to DC voltage converter has a step-down ratio of at least about 2 to 1.

34. The improved ground illumination system according to Claim 1, wherein said DC voltage to DC voltage converter has a step-down ratio of at least about 4 to 1.

35. The improved ground illumination system according to Claim 1, wherein said DC voltage to DC voltage converter has a step-down ratio of at least about 6 to 1.

36. The improved ground illumination system according to Claim 1, wherein said ground illumination light assembly includes a lens, and light from said single high-intensity power light emitting diode passing through said lens.

37. The improved ground illumination system according to Claim 36, wherein said lens comprises one of a diffractive optical element and a refractive optical element.

38. The improved ground illumination system according to Claim 36, wherein said lens comprises a lens chosen from a fresnel-optic lens, a binary-optic lens, a diffusive-optic lens, a holographic-optic lens, and a sinusoidal-optic lens.

39. The improved ground illumination system according to Claim 1, wherein said ground illumination light assembly includes said power resistor.

40. The improved ground illumination system according to Claim 1, wherein said ground illumination light assembly includes said voltage converter.

41. The improved ground illumination system according to Claim 1, wherein said heat dissipation element comprises a heat sink/reflector for dissipating heat from said single high-intensity power light emitting diode and for directing light from said single high-intensity power light emitting diode.

42. The improved ground illumination system according to Claim 41, wherein said heat sink/reflector comprises a metal reflector having a high heat conductivity.

43. The improved ground illumination system according to Claim 42, wherein said metal reflector comprises a metal material chosen from copper, a copper alloy, aluminum, and brass.

44. The improved ground illumination system according to Claim 33, wherein said heat sink/reflector is configured to shape light emitted from said single high-intensity power light emitting diode.

45. The improved ground illumination system according to Claim 1, wherein said light assembly comprises a light module.

46. The improved ground illumination system according to Claim 45, wherein said light module includes said heat dissipation element.

47. The improved ground illumination system according to Claim 45, wherein said light module includes said power resistor.

48. The improved ground illumination system according to Claim 45, wherein said light module includes said voltage converter.

49. The improved ground illumination system according to Claim 45, wherein said light module includes a lens, light from said single high-intensity power light emitting diode passing through said lens.

50. The improved ground illumination system according to Claim 49, wherein said lens comprises a lens chosen from a fresnel-optic lens, a binary-optic lens, a diffusive-optic lens, a holographic-optic lens, and a sinusoidal-optic lens.

51. The improved ground illumination system according to Claim 45, wherein said light module includes said heat dissipation element, said heat dissipation element

comprising a heat sink/reflector for dissipating heat from said single high-intensity power
light emitting diode and for directing light from said single high-intensity power light
5 emitting diode.

52. The improved ground illumination system according to Claim 1, wherein said
single high-intensity power light emitting diode emits at least about 1 lumen.

53. The improved ground illumination system according to Claim 52, wherein
said single high-intensity power light emitting diode emits at least about 5 lumens.

54. The improved ground illumination system according to Claim 52, wherein
said single high-intensity power light emitting diode emits at least about 10 lumens.

55. The improved ground illumination system according to Claim 52, wherein
said single high-intensity power light emitting diode emits at least about 15 lumens.

56. The improved ground illumination system according to Claim 52, wherein
said single high-intensity power light emitting diode emits at least about 20 lumens.

57. The improved ground illumination system according to Claim 1, wherein said
single high-intensity power light emitting diode is operated at a forward current of at least
about 250 milliamps.

58. The improved ground illumination system according to Claim 45, wherein
said single high-intensity power light emitting diode is operated at a forward current of at
least about 350 milliamps.

59. The improved ground illumination system according to Claim 1, wherein said
reflective element comprises an electrochromic reflective element.

60. An improved interior lighting system for a vehicle comprising:
an interior mirror assembly adapted for attachment to an interior portion of a
vehicle;

said interior mirror assembly including a mirror reflective element;

5 said interior rearview mirror assembly further including a light assembly, said light assembly configured so as to illuminate an area inside the vehicle when said interior mirror assembly is attached to said interior portion of the vehicle and when said light assembly illuminates; and

10 said light assembly comprises a single non-incandescent light source, said single non-incandescent light source comprising a single high-intensity power light emitting diode having a luminous efficiency of at least about 1 lumen per watt when said single high-intensity power light emitting diode is operated and wherein said single high-intensity power light emitting diode is operated at a forward current of at least about 100 milliamps.

61. The improved interior lighting system according to Claim 60, wherein said light assembly is positioned to project light from a lower portion of said interior mirror assembly.

62. The improved interior lighting system according to Claim 60, wherein said light assembly projects a beam of light onto a console area of the vehicle.

63. The improved interior lighting system according to Claim 60, wherein said light assembly projects a beam of light onto a lap area of a passenger in the vehicle.

64. The improved interior lighting system according to Claim 60, further comprising a heat dissipation element adapted to dissipate heat from said single high-intensity power light emitting diode.

65. The improved interior lighting system according to Claim 60, further comprising a voltage conversion element adapted to step down an applied vehicle battery/ignition voltage to an operational voltage for said single high-intensity power light emitting diode.

66. The improved interior lighting system according to Claim 65, wherein said operational voltage is in a range of about 1 to 5 volts.

67. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode dissipates at least about one watt of power when operated.

68. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode dissipates at least about 1.5 watts of power when operated.

69. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode dissipates at least about 2 watts of power when operated.

70. The improved interior lighting system according to Claim 64, wherein said light assembly includes said heat dissipation element.

71. The improved interior lighting system according to Claim 64, wherein said heat dissipation element includes a reflective surface for reflecting light emitted by said single high-intensity power light emitting diode.

72. The improved interior lighting system according to Claim 71, further comprising a light directing element, said light directing element directing light emitted from said single high-intensity power light emitting diode toward the interior portion of the vehicle.

73. The improved interior lighting system according to Claim 71, further comprising a lens, light from said single high-intensity power light emitting diode passing through said lens.

74. The improved interior lighting system according to Claim 64, wherein said heat dissipation element comprises a heat sink.

75. The improved interior lighting system according to Claim 74, wherein said heat sink comprises a metal heat sink.

76. The improved interior lighting system according to Claim 74, wherein heat sink includes a heat dissipation surface area of at least about 1 square inch.

77. The improved interior lighting system according to Claim 74, wherein said heat sink includes a heat dissipation surface area of at least about 2.5 square inches.

78. The improved interior lighting system according to Claim 74, wherein said heat sink includes a heat dissipation surface area of at least about 3.5 square inches.

79. The improved interior lighting system according to Claim 74, wherein said light assembly includes said heat sink.

80. The improved interior lighting system according to Claim 74, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink.

81. The improved interior lighting system according to Claim 80, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink by a heat sink compound.

82. The improved interior lighting system according to Claim 80, wherein said heat sink comprises a reflector.

83. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode operates at an operational voltage of at least about 1 volt.

84. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode operates at an operational voltage of less than about 5 volts.

85. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode operates at an operational voltage in a range of about 2 to 5 volts.

86. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode operates at an operational voltage that is less than a percentage of the battery/ignition voltage of the vehicle to which said mirror assembly is adapted to attach, said percentage being about 50%.

87. The improved interior lighting system according to Claim 86, wherein said percentage is about 35%.

88. The improved interior lighting system according to Claim 86, wherein said percentage is about 20%.

89. The improved interior lighting system according to Claim 86, wherein the battery/ignition voltage is about 12 volts nominal.

90. The improved interior lighting system according to Claim 86, wherein the battery/ignition voltage is about 42 volts nominal.

91. The improved interior lighting system according to Claim 86, wherein the battery/ignition voltage is in a range of about 12 to 42 volts nominal.

92. The improved interior lighting system according to Claim 60, further comprising a power resistor, said power resistor being rated to dissipate at least about 3 watts of power.

93. The improved interior lighting system according to Claim 92, wherein said power resistor is rated to dissipate at least about 3.5 watts of power.

94. The improved interior lighting system according to Claim 65, wherein said voltage conversion element has a step-down ratio of at least about 2 to 1.

95. The improved interior lighting system according to Claim 65, wherein said voltage conversion element has a step-down ratio of at least about 4 to 1.

96. The improved interior lighting system according to Claim 65, wherein said voltage conversion element has a step-down ratio of at least about 6 to 1.

97. The improved interior lighting system according to Claim 60, wherein said light assembly includes a lens, and light from said single high-intensity power light emitting diode passing through said lens.

98. The improved interior lighting system according to Claim 97, wherein said lens comprises one of a diffractive optical element and a refractive optical element.

99. The improved interior lighting system according to Claim 97, wherein said lens comprises a lens chosen from a fresnel-optic lens, a binary-optic lens, a diffusive-optic lens, a holographic-optic lens, and a sinusoidal-optic lens.

100. The improved interior lighting system according to Claim 92, wherein said light assembly includes said power resistor.

101. The improved interior lighting system according to Claim 65, wherein said light assembly includes said voltage conversion element.

102. The improved interior lighting system according to Claim 64, wherein said light assembly includes said heat dissipation element.

103. The improved interior lighting system according to Claim 102, wherein said heat dissipation element comprises a heat sink/reflector for dissipating heat from said single high-intensity power light emitting diode and for directing light from said single high-intensity power light emitting diode.

104. The improved interior lighting system according to Claim 103, wherein said heat sink/reflector comprises a metal reflector having a high heat conductivity.

105. The improved interior lighting system according to Claim 104, wherein said metal reflector comprises a metal material chosen from copper, a copper alloy, aluminum, and brass.

106. The improved interior lighting system according to Claim 103, wherein said heat sink/reflector is configured to shape light emitted from said single high-intensity power light emitting diode.

107. The improved interior lighting system according to Claim 92, wherein said light assembly comprises a light module.

108. The improved interior lighting system according to Claim 60, wherein said light assembly comprises a reading light assembly.

109. The improved interior lighting system according to Claim 60, wherein said light assembly comprises a reading light module.

110. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode operates at a forward current of at least about 250 milliamps.

111. The improved interior lighting system according to Claim 110, wherein said single high-intensity power light emitting diode operates at a forward current of at least about 350 milliamps.

112. The improved interior lighting system according to Claim 60, wherein said single high-intensity power light emitting diode emits at least about one lumen.

113. The improved interior lighting system according to Claim 112, wherein said single high-intensity power emitting diode emits at least about 5 lumens.

114. The improved interior lighting system according to Claim 113, wherein said single high-intensity power emitting diode emits at least about 10 lumens.

115. The improved interior lighting system according to Claim 114, wherein said single high-intensity power emitting diode emits at least about 15 lumens.

116. The improved interior lighting system according to Claim 115, wherein said single high-intensity power emitting diode emits at least about 20 lumens.

117. The improved interior lighting system according to Claim 107, wherein said light module includes said power resistor.

118. The improved interior lighting system according to Claim 65, wherein said light assembly comprises a light module, said light module including said voltage conversion element.

119. The improved interior lighting system according to Claim 64, wherein said light assembly comprises a light module, said light module including said heat dissipation element.

120. The improved interior lighting system according to Claim 119, wherein said heat dissipation element comprises a heat sink/reflector for dissipating heat from said single high-intensity power light emitting diode and for directing light from said single high-intensity power light emitting diode.

121. The improved interior lighting system according to Claim 120, wherein said light module includes a lens, said heat sink/reflector for directing light from said single high-intensity power light emitting diode through said lens.

122. The improved interior lighting system according to Claim 60, wherein said reflective element comprises an electrochromic reflective element.

123. The improved interior lighting system according to Claim 60, wherein said interior portion comprises a windshield portion.

124. The improved interior lighting system according to Claim 60, wherein said interior portion comprises a header portion.

125. The improved interior lighting system according to Claim 108, wherein said light assembly comprises one of a driver side reading light assembly and a passenger side reading light assembly.

126. The improved interior lighting system according to Claim 60, wherein said light assembly comprises a first light assembly, said lighting system further comprising a further light assembly.

127. The improved interior lighting system according to Claim 126, wherein said further light assembly comprises a passenger side light assembly.

128. The improved interior lighting system according to Claim 127, wherein said passenger side light assembly comprises a passenger side reading light assembly.

129. The improved interior lighting system according to Claim 126, wherein said further light assembly comprises a reading light assembly.

130. An improved lighting system for a vehicle, said lighting system comprising:
an accessory module assembly adapted for attachment to an interior portion of
a vehicle;

said accessory module assembly configured to illuminate an area inside the
5 vehicle when said accessory module assembly is attached to said interior portion of the
vehicle;

said accessory module assembly comprising a single non-incandescent light
source, said single light source comprising a single high-intensity power light emitting diode
emitting light for illuminating the area with a luminous efficiency of at least about 1

10 lumen/watt when said single high-intensity power light emitting diode is operated and

wherein said single high-intensity power light emitting diode is operated at a forward current of at least about 100 milliamps;

a heat dissipation element adapted to dissipate heat from said single high-intensity power light emitting diode; and

15 a power resistor.

131. The improved lighting system according to Claim 130, wherein said area is at a distance of greater than about 20 inches from said accessory module assembly.

132. The improved lighting system according to Claim 130, wherein said area is at a distance of less than about 40 inches from said accessory module assembly.

133. The improved lighting system according to Claim 130, wherein said area is at a distance in a range of about 20 to 40 inches from said accessory module assembly.

134. The improved lighting system according to Claim 130, further comprising a voltage conversion element for converting a battery/ignition voltage of the vehicle to which the accessory module assembly is adapted to attach to an operational voltage for said single high-intensity power light emitting diode having a step down ratio of at least about 2 to 1.

135. The improved lighting system according to Claim 130, further comprising a voltage conversion element for converting a battery/ignition voltage of the vehicle to which the accessory module assembly is adapted to attach to an operational voltage for said single high-intensity power light emitting diode having a step down ratio of at least about 4 to 1.

136. The improved lighting system according to Claim 130, further comprising a voltage conversion element for converting a battery/ignition voltage of the vehicle to which the accessory module assembly is adapted to attach to an operational voltage for said single high-intensity power light emitting diode having a step down ratio of at least about 6 to 1.

137. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode emits at least about 1 lumen.

138. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode emits at least about 5 lumens.

139. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode emits at least about 10 lumens.

140. The improved lighting system according to Claim 130, wherein said heat dissipation element includes a reflective surface for reflecting light emitted by said single high-intensity power light emitting diode.

141. The improved lighting system according to Claim 140, said accessory module assembly including a light directing element, said light directing element directing light emitted from said single high-intensity power light emitting diode toward the area of the vehicle.

142. The improved lighting system according to Claim 130, wherein said heat dissipation element comprises a heat sink.

143. The improved lighting system according to Claim 142, wherein said heat sink comprises a metal heat sink.

144. The improved lighting system according to Claim 142, wherein heat sink includes a heat dissipation surface area of at least about 1 square inch.

145. The improved lighting system according to Claim 144, wherein said heat sink includes a plurality of fins providing said dissipation surface area.

146. The improved lighting system according to Claim 142, wherein said accessory module assembly includes a reflector, said reflector comprising said heat sink.

147. The improved lighting system according to Claim 142, wherein said accessory module assembly includes said heat sink.

148. The improved lighting system according to Claim 142, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink.

149. The improved lighting system according to Claim 148, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink by a heat sink compound.

150. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode operates at forward current greater than about 250 milliamps.

151. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode operates at forward current greater than about 350 milliamps.

152. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode operates at an operational voltage of at least about 1 volt.

153. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode operates at an operational voltage of at least about 2 volts.

154. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode operates at an operational voltage in a range from about 2 to 5 volts.

155. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode operates at an operational voltage that is less than a percentage of the battery/ignition voltage of the vehicle to which said accessory module assembly is adapted to attach, wherein said percentage is about 50%.

156. The improved lighting system according to Claim 155, wherein said percentage is about 35%.

157. The improved lighting system according to Claim 155, wherein said percentage is about 20%.

158. The improved lighting system according to Claim 155, wherein the battery/ignition voltage is about 12 volts nominal.

159. The improved lighting system according to Claim 155, wherein the battery/ignition voltage is about 42 volts nominal.

160. The improved lighting system according to Claim 130, wherein said power resistor is rated to dissipate at least about 2.5 watts of power.

161. The improved lighting system according to Claim 160, wherein said power resistor is rated to dissipate at least about 3.0 watts of power.

162. The improved lighting system according to Claim 160, wherein said power resistor is rated to dissipate at least about 3.5 watts of power.

163. The improved lighting system according to Claim 130, wherein said accessory module assembly includes said power resistor.

164. The improved lighting system according to Claim 134, wherein said accessory module assembly includes said voltage conversion element.

165. The improved lighting system according to Claim 130, wherein said accessory module assembly includes said heat dissipation element.

166. The improved lighting system according to Claim 130, wherein said accessory module assembly comprises a light assembly.

167. The improved lighting system according to Claim 130, wherein said accessory module assembly comprises a removable light assembly.

168. The improved lighting system according to Claim 130, further comprising a mirror assembly, said accessory module assembly located at said mirror assembly.

169. The improved lighting system according to Claim 130, wherein said accessory module assembly includes a lens, and light from said single high-intensity power light emitting diode passing through said lens.

170. The improved lighting system according to Claim 169, wherein said lens comprises one of a diffractive optical element and a refractive optical element.

171. The improved lighting system according to Claim 169, wherein said lens comprises a lens chosen from a fresnel-optic lens, a binary-optic lens, a diffusive-optic lens, a holographic-optic lens, and a sinusoidal-optic lens.

172. The improved lighting system according to Claim 130, wherein said heat dissipation element comprises a heat sink/reflector for dissipating heat from said single high-intensity power light emitting diode and for directing light from said single high-intensity power light emitting diode.

173. The improved lighting system according to Claim 172, wherein said heat sink/reflector comprises a metal reflector having a high heat conductivity.

174. The improved lighting system according to Claim 173, wherein said metal reflector comprises a metal material chosen from copper, a copper alloy, aluminum, and brass.

175. The improved lighting system according to Claim 172, wherein said heat sink/reflector is configured to shape light emitted from said single high-intensity power light emitting diode.

176. The improved lighting system according to Claim 166, wherein said accessory module assembly includes said heat dissipation element.

177. The improved lighting system according to Claim 166, wherein said accessory module assembly includes said power resistor.

178. The improved lighting system according to Claim 134, wherein said accessory module assembly includes said voltage conversion element.

179. The improved lighting system according to Claim 176, wherein said heat dissipation element comprises a heat sink/reflector for dissipating heat from said single high-intensity power light emitting diode and for directing light from said single high-intensity power light emitting diode.

180. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode dissipates at least about one watt of power when operated.

181. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode dissipates at least about 1.5 watts of power when operated.

182. The improved lighting system according to Claim 130, wherein said single high-intensity power light emitting diode dissipates at least about 2 watts of power when operated.

183. The improved lighting system according to Claim 130, wherein said interior portion comprises a header portion.

184. The improved lighting system according to Claim 130, wherein said interior portion comprises an interior rearview mirror assembly.

185. An improved ground illumination system for a vehicle comprising:
an exterior mirror assembly adapted for attachment to an exterior portion of a
vehicle;

said exterior mirror assembly including a mirror reflective element;

5 said exterior rearview mirror assembly further including a light assembly, said
light assembly configured so as to illuminate a ground area adjacent the side of vehicle when
said exterior mirror assembly is attached to said exterior portion of the vehicle and when said
light assembly illuminates; and

10 said light assembly comprises a single non-incandescent light source, said
single non-incandescent light source comprising a single high-intensity power light emitting
diode having a luminous efficiency of at least about 1 lumen per watt when said single high-
intensity power light emitting diode is operated and wherein said single high-intensity power
light emitting diode is operated at a forward current of at least about 100 milliamps.

186. The improved ground illumination system according to Claim 185, wherein
said light assembly is positioned to project light from a lower portion of said exterior mirror
assembly.

187. The improved ground illumination system according to Claim 185, wherein
said light assembly projects a beam of light onto the ground area.

188. The improved ground illumination system according to Claim 185, further
comprising a heat dissipation element adapted to dissipate heat from said single high-
intensity power light emitting diode.

189. The improved ground illumination system according to Claim 188, wherein
said heat dissipation element comprises a reflector.

190. The improved ground illumination system according to Claim 185, further
comprising a voltage conversion element adapted to step down an applied vehicle
battery/ignition voltage to an operational voltage for said single high-intensity power light
emitting diode.

191. The improved ground illumination system according to Claim 190, wherein said operational voltage is in a range of about 1 to 5 volts.

192. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode dissipates at least about one watt of power when operated.

193. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode dissipates at least about 1.5 watts of power when operated.

194. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode dissipates at least about 2 watts of power when operated.

195. The improved ground illumination system according to Claim 188, wherein said light assembly includes said heat dissipation element.

196. The improved ground illumination system according to Claim 188, wherein said heat dissipation element includes a reflective surface for reflecting light emitted by said single high-intensity power light emitting diode.

197. The improved ground illumination system according to Claim 196, further comprising a light directing element, said light directing element directing light emitted from said single high-intensity power light emitting diode toward the ground area adjacent the side of the vehicle.

198. The improved ground illumination system according to Claim 196, further comprising a lens, light from said single high-intensity power light emitting diode passing through said lens.

199. The improved ground illumination system according to Claim 188, wherein said heat dissipation element comprises a heat sink.

200. The improved ground illumination system according to Claim 199, wherein said heat sink comprises a metal heat sink.

201. The improved ground illumination system according to Claim 199, wherein heat sink includes a heat dissipation surface area of at least about 1 square inch.

202. The improved ground illumination system according to Claim 199, wherein said heat sink includes a heat dissipation surface area of at least about 2.5 square inches.

203. The improved ground illumination system according to Claim 199, wherein said heat sink includes a heat dissipation surface area of at least about 3.5 square inches.

204. The improved ground illumination system according to Claim 199, wherein said light assembly includes said heat sink.

205. The improved ground illumination system according to Claim 199, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink.

206. The improved ground illumination system according to Claim 205, wherein said single high-intensity power light emitting diode is thermally coupled to said heat sink by a heat sink compound.

207. The improved ground illumination system according to Claim 205, wherein said heat sink comprises a reflector.

208. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode operates at an operational voltage of at least about 1 volt.

209. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode operates at an operational voltage of less than about 5 volts.

210. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode operates at an operational voltage in a range of about 2 to 5 volts.

211. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode operates at an operational voltage that is less than a percentage of the battery/ignition voltage of the vehicle to which said mirror assembly is adapted to attach, said percentage being about 50%.

212. The improved ground illumination system according to Claim 211, wherein said percentage is about 35%.

213. The improved ground illumination system according to Claim 211, wherein said percentage is about 20%.

214. The improved ground illumination system according to Claim 211, wherein the battery/ignition voltage is about 12 volts nominal.

215. The improved ground illumination system according to Claim 211, wherein the battery/ignition voltage is about 42 volts nominal.

216. The improved ground illumination system according to Claim 211, wherein the battery/ignition voltage is in a range of about 12 to 42 volts nominal.

217. The improved ground illumination system according to Claim 185, further comprising a power resistor, said power resistor being rated to dissipate at least about 3 watts of power.

218. The improved ground illumination system according to Claim 217, wherein said power resistor is rated to dissipate at least about 3.5 watts of power.

219. The improved ground illumination system according to Claim 190, wherein said voltage conversion element has a step-down ratio of at least about 2 to 1.

220. The improved ground illumination system according to Claim 190, wherein said voltage conversion element has a step-down ratio of at least about 4 to 1.

221. The improved ground illumination system according to Claim 190, wherein said voltage conversion element has a step-down ratio of at least about 6 to 1.

222. The improved ground illumination system according to Claim 185, wherein said light assembly includes a lens, and light from said single high-intensity power light emitting diode passing through said lens.

223. The improved ground illumination system according to Claim 222, wherein said lens comprises one of a diffractive optical element and a refractive optical element.

224. The improved ground illumination system according to Claim 222, wherein said lens comprises a lens chosen from a fresnel-optic lens, a binary-optic lens, a diffusive-optic lens, a holographic-optic lens, and a sinusoidal-optic lens.

225. The improved ground illumination system according to Claim 217, wherein said light assembly includes said power resistor.

226. The improved ground illumination system according to Claim 190, wherein said light assembly includes said voltage conversion element.

227. The improved ground illumination system according to Claim 188, wherein said light assembly includes said heat dissipation element.

228. The improved ground illumination system according to Claim 227, wherein said heat dissipation element comprises a heat sink/reflector for dissipating heat from said single high-intensity power light emitting diode and for directing light from said single high-intensity power light emitting diode.

229. The improved ground illumination system according to Claim 228, wherein said heat sink/reflector comprises a metal reflector having a high-heat conductivity.

230. The improved ground illumination system according to Claim 229, wherein said metal reflector comprises a metal material chosen from copper, a copper alloy, aluminum, and brass.

231. The improved ground illumination system according to Claim 228, wherein said heat sink/reflector is configured to shape light emitted from said single high-intensity power light emitting diode.

232. The improved ground illumination system according to Claim 185, wherein said light assembly comprises a light module.

233. The improved ground illumination system according to Claim 185, wherein said light assembly comprises a reading light assembly.

234. The improved ground illumination system according to Claim 185, wherein said light assembly comprises a reading light module.

235. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode operates at a forward current of at least about 250 milliamps.

236. The improved ground illumination system according to Claim 235, wherein said single high-intensity power light emitting diode operates at a forward current of at least about 350 milliamps.

237. The improved ground illumination system according to Claim 185, wherein said single high-intensity power light emitting diode emits at least about one lumen.

238. The improved ground illumination system according to Claim 237, wherein said single high-intensity power emitting diode emits at least about 5 lumens.

239. The improved ground illumination system according to Claim 238, wherein said single high-intensity power emitting diode emits at least about 10 lumens.

240. The improved ground illumination system according to Claim 239, wherein said single high-intensity power emitting diode emits at least about 15 lumens.

241. The improved ground illumination system according to Claim 240, wherein said single high-intensity power emitting diode emits at least about 20 lumens.

242. The improved ground illumination system according to Claim 232, further comprising a power resistor, said light module including said power resistor.

243. The improved ground illumination system according to Claim 190, wherein said light assembly comprises a light module, said light module including said voltage conversion element.

244. The improved ground illumination system according to Claim 188, wherein said light assembly comprises a light module, said light module including said heat dissipation element.

245. The improved ground illumination system according to Claim 244, wherein said heat dissipation element comprises a heat sink/reflector for dissipating heat from said single high-intensity power light emitting diode and for directing light from said single high-intensity power light emitting diode.

246. The improved ground illumination system according to Claim 245, wherein said light module includes a lens, said heat sink/reflector for directing light from said single high-intensity power light emitting diode through said lens.

247. The improved ground illumination system according to Claim 185, wherein said reflective element comprises an electrochromic reflective element.

248. The improved ground illumination system according to Claim 185, wherein said exterior portion comprises a door of the vehicle.

249. The improved ground illumination system according to Claim 185, wherein said light assembly comprises a first light assembly, said lighting system further comprising a further light assembly.

250. The improved ground illumination system according to Claim 249, wherein said further light assembly comprises a passenger side light assembly.